

a varying number of tracheal rings are incomplete in front as well as behind, instead of being complete anteriorly, as in *Strix*, makes it appear as if the attachment of the said muscles had moved further down the bronchi. Of the above-mentioned types *Asio* is furthest removed from *Strix*; there are seven tracheal rings intervening between the last complete one and the first bronchial which bears the muscles.

This modification of the syrinx culminates in *Scops leucotis* (fig. 7, p. 343), where the syringeal muscles are attached to the tenth semiring.

There is thus a gradual series (which would probably be more complete could I report upon a larger collection of syringes) leading from *Strix* to *Scops*.

As the series is gradual, it is impossible to make a break anywhere, although the extremes, viz. *Scops* and *Strix* (cf. figs. 5 & 7), are different enough.

In view of the object of the present paper (that is, of establishing the justice of dividing the Striges into two groups), I may point out that the structure of the syrinx, although it would not be sufficient, if considered by itself, to justify such a classification, is by no means contradictory to it.

XXXV.—On the Birds observed by Dr. Bunge on his recent Visit to Great Liakoff Island. By HENRY SEEBOHM.

For a period of five years, from 1882 to 1887, many interesting observations were made by Dr. Bunge in North-east Siberia. The results of his visit to the delta of the Lena were published in the 'Mélanges Biologiques tirés du Bulletin de l'Académie Impériale des Sciences de St. Pétersbourg,' xii. livr. i. pp. 31-107, of which a *résumé* may be found in the 'Transactions of the Norfolk and Norwich Naturalists' Society,' iv. pp. 301-305. The record of Dr. Bunge's observations in Great Liakoff Island is to be found in the 'Beiträge zur Kenntniss des Russischen Reiches und der angrenzenden Länder Asiens,' iii. pp. 231-283.

Dr. Bunge crossed the ice from the mainland to Great

Liakoff Island from the 6th to the 15th of April, 1886, he and his party employing twelve dog-sledges to perform the journey. A month later he accompanied Boron Toll to Kotelnyi, the largest of the New Siberian Islands, and afterwards returned to Great Liakoff, leaving his companion on the more northerly island to search for mammoth remains and other objects of interest. In the middle of November both the travellers recrossed the ice to the mainland.

The following account of the birds observed by Dr. Bunge during his stay upon Great Liakoff Island is compiled from his journal.

Great Liakoff Island lies ten degrees east of the delta of the Lena, between 73° and 74° N. lat. It is the most southerly of the New Siberian Islands, and is connected with the mainland by ice, which never entirely disappears. The climate is cold, even in the middle of summer; north winds prevail, and bring down fog and sometimes snow-storms even in July. The thermometer did not rise above freezing-point until the 9th of June; vegetation did not begin to appear until the 19th, and insects were scarcely seen before the 22nd; but summer began on the 28th, when the temperature reached 50° in the shade. The highest point registered was on the 26th of July, when the thermometer stood at 55° in the shade; but a fortnight later summer was over, and during the latter half of August it frequently froze. After the 17th of September the thermometer only rose once above freezing-point.

The only trees are stunted willows; the tundra is by no means rich in flowers. Three groups of granite hills near the coast, and one in the middle of the island, rise nearly a thousand feet above the sea. In the hollows of these hills large masses of snow and huge blocks of ice remain unmelted throughout the summer.

In winter the island is said to be absolutely deserted; but every summer it is visited by small parties of nomad Yakuts and herds of wild reindeer, wolves, arctic foxes, and lemmings, whilst seals and polar bears are occasionally seen on the coast.

From this group of islands great quantities of mammoth ivory have been sent. The bones are found along with those of extinct species of rhinoceros, musk-ox, deer, hare, and seal.

The following is a list of the birds obtained or observed by Dr. Bunge:—

SURNIA NYCTEA.

Once only (on the 5th of September) was a bird of prey seen on the island, and doubtfully recorded as most probably a Rough-legged Buzzard; but Snowy Owls were occasionally observed.

EMBERIZA NIVALIS.

Only four Passerine birds (two of them only solitary stray visitors) were observed on the island, though as many as five-and-twenty species are recorded from the valley of the Lena on the mainland.

The Snow Buntings had arrived on the island before our travellers reached it. On the 7th of June they were in full song; on the 20th they were evidently building, and on the 11th of July they had young. They were last seen on the 22nd of September.

EMBERIZA LAPPONICA.

Buntings (which have been since identified as Lapland Buntings) are first recorded on the 10th of June, and had become common on the 14th; on the 20th they were evidently building, and on the 28th a nest with five fresh eggs was taken. Other nests with much incubated eggs were taken on the 7th and 8th of July; and on the 11th a nest with newly hatched young was found. They were seen every day until the 3rd of September, when the last bird of this species left for the south, about three weeks before the Snow Buntings.

+ *MOTACILLA ALBA.*

A solitary White Wagtail was seen on the 22nd of June.

+ *SAXICOLA CENANTHE.*

The Wheatear is only once mentioned; on the 25th of July it was observed at the west end of the island.

† TETRAO ALBUS.

The Willow Grouse was seen during the whole winter on the mainland, and may possibly be also a resident on Liakoff Island. On the 10th of July a nest with six eggs was taken, and on the 16th another with four eggs. On the 22nd young were seen, and on the 11th of August a male bird was shot with the white feathers appearing under the brown plumage.

† CHARADRIUS HIATICULA.

I have never seen an example of the Common Ringed Plover from any locality east of the valley of the Yenesay; but Mr. Pleske assures me that the skins sent by Dr. Bunge are those of *C. hiaticula* and not of *C. placidus*. It is first mentioned on the 11th of June, when several examples were seen. It is recorded as having been rare on the 13th, 16th, and 17th, but as more common on the 20th. On the 17th of July it appeared to be breeding, and on the 29th young in down were seen.

† CHARADRIUS FULVUS.

A Golden Plover was seen on the 12th of June, and several on the 14th, and the species identified as the one with grey axillaries on the 16th. They were more abundant on the 20th, and a nest with four eggs was taken on the 30th.

† CHARADRIUS HELVETICUS.

A pair of Grey Plovers were seen on the 19th of June, and more on the 20th; but no further mention is made of this species.

† CHARADRIUS MORINELLUS.

Two female Dotterels were shot on the 30th of June, and a pair which evidently had eggs or young were seen on the 25th of July. A small flock was observed on the 27th of July; so that the occurrence of this species east of the Yenesay is established beyond doubt. Mr. Pleske has examined the skins sent by Dr. Bunge and assures me that they are correctly identified.

LIMOSA RUFA UROPYGIALIS.

We may take it for granted that the Bar-tailed Godwits observed on the Great Liakoff Island belonged to the eastern form of that species. They are doubtfully recorded on the 1st of July, and flocks were seen and many birds shot on the 2nd and 3rd. Large flocks were seen on the 5th, and afterwards until the 16th. The Yakuts told Dr. Bunge that these birds did not breed on the island; but on the 4th of August he observed a male, which behaved exactly as if it had a nest. On the 12th of August two examples were seen flying south.

STREPSILAS INTERPRES.

Turnstones were seen on the 16th of June and on several subsequent days. On the 27th a nest with four somewhat incubated eggs was found, and on the 13th of August a fully fledged young bird was seen.

+TOTANUS PUGNAX.

A young Ruff was obtained on the 19th of August.

TRINGA CANUTUS.

The first Knot was seen on the 6th of July, and on the 11th small flocks appeared. On the 14th several examples were shot, and on the 18th more; but on the 20th this species became rarer, and is not recorded after the 31st.

TRINGA MINUTA.

The Stint recorded under this name appears to have been neither *Tringa minuta ruficollis* nor *Tringa subminuta*, as might have been expected, but is determined by Mr. Pleske to have been the western form of the Little Stint. On the other hand, an example from the delta of the Lena and a second from Ustyansk on the delta of the Lena are referred to *T. minuta ruficollis*. The Little Stint was first seen on the 16th of June, and several were shot on the 20th. A nest with four fresh eggs was taken on the 20th, and it is described as having been very common on the 2nd of July. Young in down are recorded on the 21th of July, and young able to fly on the 13th of August.

+ *TRINGA SUBARQUATA.*

The Curlew Sandpiper is first recorded as appearing in small flocks on the 11th of June, and as having been shot on the 14th, and found in greater numbers on the 18th; but it is described as having become rarer on the 20th, and is not mentioned afterwards. There can be little doubt that both this species and the Knot breed further north.

+ *TRINGA ARENARIA.*

A flock of Sanderlings was seen on the 10th of June, and others appeared on the 20th and 22nd. This species is not recorded again until the 26th of July; but on the 29th a flock was observed, and on the 13th of September a single example was seen.

+ *PHALAROPUS FULICARIUS.*

The Grey Phalarope is first recorded on the 19th of June, when a pair were seen; on the 20th several pairs appeared, and on the 5th of July a nest with four incubated eggs was found. On the 6th a nest with three fresh eggs was discovered, and several males with great sitting-spots were obtained. On the 11th of August small flocks in autumn plumage were seen, and a few solitary birds lingered until the 13th of September.

+ *STERCORARIUS RICHARDSONI.*

Skuas were first seen on the 14th of June, and identified on the 17th as Richardson's Skua; but this species was only occasionally seen.

+ *STERCORARIUS BUFFONI.*

Buffon's Skua was first identified on the 21st June; on the next day it became commoner, still more so on the 31st, and very common on the 11th of July.

+ *STERCORARIUS POMARINUS.*

The Pomarine Skua was first seen on the 20th of June, but appears to have been very rarely seen afterwards.

+ *LARUS VEGÆ.*

The Herring Gull found by Dr. Bunge on the Liakoff Islands is identified by Mr. Pleske with the species found on

the coast of Tehuski Land by the 'Vega' expedition, which was described as a new species by Palmén under the name of *Larus argentatus*, var. *vegæ*. It is said to differ from *L. affinis* in having flesh-coloured legs (Palmén, Bidrag Sibir. Ishafsk. Fogelfauna Vega-exp. p. 370). It is first recorded on the 2nd of June, said to be commoner on the 9th, and still more so on the 11th. On the 29th a slightly incubated egg was found, and on the 6th of July three nearly fresh eggs. On the 26th of August the young were able to fly.

LARUS GLAUCUS.

Glaucous Gulls were occasionally seen.

COLYMBUS SEPTENTRIONALIS.

The Red-throated Diver is recorded on the 21st of June, and several are said to have been seen on the 22nd. Several were heard on the 4th of July, and one was seen on the 22nd, and others on the 26th. Many were seen on the 11th of August, and a few remained until the 9th of September.

ANSER ALBIFRONS.

On the 5th of June and afterwards a solitary White-fronted Goose was seen, and on the 11th and afterwards small flocks began to appear. On the 6th of July a nest with four incubated eggs was found, and from the 7th to the 21st birds were frequently seen. From the 20th of July to the end of the month they were observed in full moult; and two examples were seen as late as the 13th of September.

ANSER BRENTA.

A pair of Brent Geese were seen on the 10th of June, and a second pair on the 12th. On the 20th several were shot, and large flocks were seen from the 8th of July to the 16th. On the 28th four examples were seen.

SOMATERIA STELLERI.

Steller's Eider Duck is recorded on the 7th of May, when a flock was seen flying towards the Lena delta. Three days later another flock was seen flying in the same direction. On the 20th, 21st, and 27th of June, and on the 3rd and 6th of July, other flocks were seen. No other records occur, except

that between the 16th and 26th of August mention is made of their occurrence.

— *SOMATERIA SPECTABILIS*.

A large flock of King Eiders were seen on the 9th of June, and others were seen on the 14th. A pair were shot on the 17th, and others were seen on the 20th and 21st. On the 3rd of July a nest with three eggs was found, and between the 20th and the 26th flocks of females were seen.

— *FULIGULA GLACIALIS*.

Long-tailed Ducks were heard on the 5th of June, but do not appear to have been seen until the 20th. They were occasionally observed for some weeks; and between the 16th and 26th of August they appeared in large flocks.

ANAS FORMOSA.

The Baikal Teal is described as very rare; but a nest with four fresh eggs was taken on the 29th of June. The species is doubtfully recorded on the 3rd of July, but no example is said to have been obtained.

XXXVI.—*Critical Notes on the Procellariidæ*.

By OSBERT SALVIN, M.A., F.R.S., &c.

IN the first volume of the late Mr. G. Dawson Rowley's 'Ornithological Miscellany' I published two articles on the Procellariidæ under the above given title. I now propose to continue the series, with a view to preparing the ground for the completion of a long-promised Monograph of the family. The present paper has been based chiefly on an examination of some of the specimens brought to England by Sir Walter Buller from New Zealand, the determination of which was necessary for the second edition of his 'Birds of New Zealand,' now in course of issue.

Some other specimens have also been examined, as will be seen from the following notes. The arrangement of the series of specimens in the British Museum, and the incorporation with it of Gould's, Mr. Seebohm's, and our own col-